

FROM SYMMETRIC SPIN GLASSES TOWARD
THE PERCOLATION THRESHOLD:
DIMENSIONAL CROSSOVER

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S u m m a r y

The concept of the effective dimensionality d has been attracted to explain the violation of universality rules for critical exponents in spin glasses. Using a simple qualitative model of the magnetic host with free embedded clusters, we presume that the effective dimension of short-range spin glasses with a strong ferromagnetic bias may differ from the Euclidean value $d_E = 3$ and tend to $d_f = 2.48$ corresponding to the fractal dimension at the percolation threshold. Since the lowest critical dimension in spin glasses $d_L \approx 2.5$ was theoretically predicted to be comparable to d_f , the violation is expected the more clear, the closer a spin glass to the percolation threshold (upto the breakdown of the phase transition to a spin glass state). Experimental evidences in favor of this viewpoint have been obtained. Other scenarios for the violation of universality rules are also discussed.